

ACALYPTOCOCCUS EUGENIAE: A NEW GENUS AND SPECIES OF
ERIOCOCCID FROM SINGAPORE (HOMOPTERA:
COCCOIDEA: ERIOCOCCIDAE)

PARIS L. LAMBDIN

Department of Agricultural Biology, University of Tennessee,
Knoxville, Tennessee 37901

MICHAEL KOSZTARAB

Department of Entomology, Virginia Polytechnic Institute and State University,
Blacksburg, Virginia 24061

ABSTRACT—*Acalyptococcus eugeniae*, a new genus and species of scale insect from Singapore, is described and illustrated. A discussion on the affinities of the genus is presented.

A new genus is proposed because of several morphological characteristics that distinguish it from existing genera of Eriococcidae. A description and illustration of the adult female is presented.

Specimen diagnostics were determined by using a phase contract microscope (160x - 2000x). Measurements of morphological characters, except for test measurements, are presented in microns as an average followed by the range in parentheses.

Acalyptococcus Lambdin and Kosztarab, NEW GENUS

This monotypic genus belongs to the family Eriococcidae and is restricted to the Oriental Region. The generic characteristics which distinguish this genus from other eriococcids are: the possession of segmental rows of bisclerotic, bifurcate microtubular ducts, distribution of dorsal setae, most of which are not enlarged, absence of macro-tubular ducts, protruding anal lobes which are slightly sclerotized; ventrum with quinquelocular pores in a marginal band and in transverse segmental rows, and the arrangement of cruciform pores.

Etymology: The proposed generic name is Greek meaning "uncovered coccid" and refers to the lack of white fluffy wax on the dorsum.

Type-species: *Acalyptococcus eugeniae* Lambdin and Kosztarab.

Affinities: *Acalyptococcus* appears to be most closely related to *Scutare* Brittin based on the female's resting on a cushion of white powdery wax and having a pyriform body with dorsal abdominal segments heavily sclerotized, marginal and medial rows of setae on dorsum, 6-segmented antennae, area surrounding spiracles heavily sclerotized, and legs well developed with tarsus longer than tibia.

The genus may be distinguished from *Scutare* by the type of micro-tubular ducts present on the dorsum and the lack of such ducts on the venter (except on margin). The tubular duct of *Acalyptococcus*



Fig. 1. *Acalyptococcus eugeniae*. a, adult females on host, *Eugenia linocieroides*, and showing powdery wax around margin. b, male pupal cocoons in cluster on host.

has a single distal orifice compared to bilocular openings in *Scutarea*. Other distinct differences between the two genera are the arrangement of cruciform pores and the majority of the pores on the margin and abdomen are quinquelocular in *Acalyptococcus* rather than septilocular as in *Scutarea*.

Acalyptococcus eugeniae Lambdin and Kosztarab, NEW SPECIES

Type-locality: Bukit Batok Forest, Singapore.

Type-material: The holotype and 4 paratypes on 5 slides deposited in the U.S. National Museum of Natural History, Washington, D.C.; other paratypes: 2(1), British Museum (Natural History); 1(1), University of Singapore, Singapore; 1(1), Institute of Zoology of USSR, Leningrad, Russia; 1(1), National Museum (Natural History) Entomology, Paris, France; 2(1), Waite Agricultural Research Institute, Adelaide, S. Australia; 2(1), Virginia Polytechnic Institute and State University, Blacksburg, VA.; 8(4), University of Tennessee, Knoxville, TN. From *Eugenia linocieroides* King (Myrtaceae), Bukit Batok Forest, Singapore, coll. D. H. Murphy and M. Kosztarab, 2 Aug. 1972, (PL 104a-r).

Habits: Adult female and immature stages were found in close proximity to each other on the host. Adult females (Fig. 1a) and male cocoons (Fig. 1b) are usually separated; however, several males were found to be closely associated with an adult female. The population of scale insects was found to be protected by the shelter of ants (*Camponotus* sp.).

Description: *Female* (Fig. 1a): Pyriform, reddish brown in color, resting on cushion of fluffy, white wax; 1.0–2.0 mm long, 1.0–1.5 mm wide.

Male pupal cocoon (Fig. 1b): Elongate, felt-like, white; 1.0–1.5 mm long, 0.5–0.8 mm wide.

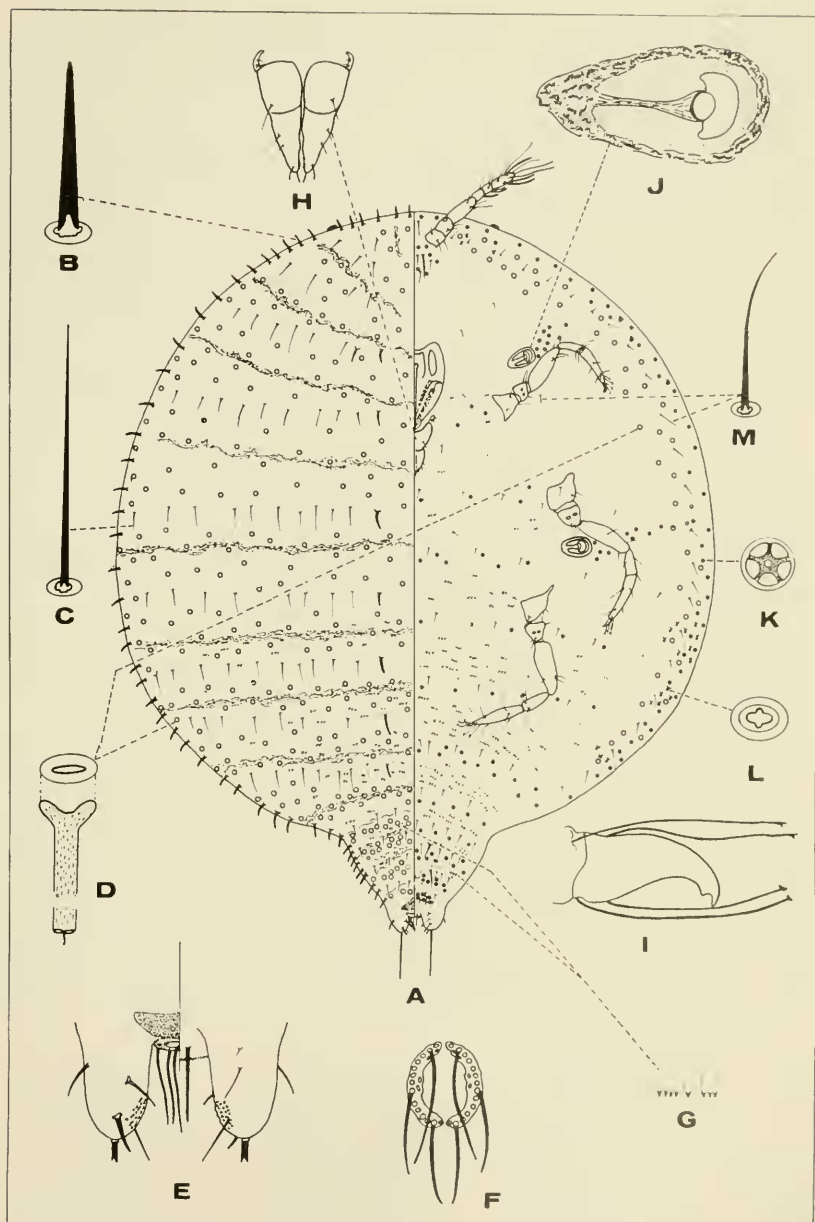


Fig. 2. *Acalyptococcus eugeniæ*. A, dorsoventral view. B, marginal seta. C, segmental seta. D, microtubular duct. E, anal lobes. F, anal ring. G, microspines. H, labium. I, claw. J, spiracle. K, quinquelocular pore. L, cruciform pore. M, body seta.

Body (Fig. 2A): Slide mounted female 1459(1330-1600) long, 1081(855-1330) wide, pyriform, tapering posteriorly. Derm heavily sclerotized dorsally with the exception of a transverse band at constriction of abdominal segments, and membranous ventrally.

Dorsal surface. Setae: A marginal row of spinelike setae (Fig. 2B) extending from head to anal lobes, 2-4 per segment, each 33.6 (27.6-53.0) long; 7 or 8 pairs of thick setae medially positioned on cephalothoracic and abdominal segments, 24.8 (18.4-29.9) long, similar in shape to marginal setae; segments with a row of hairlike setae (Fig. 2C) 50.0 (29.3-68.5) long. *Microtubular ducts* (Fig. 2D): Short and broad, distal orifice oval, ductile usually bisclerotic, with minute medial filament extending proximally, arranged in segmental rows or bands, most numerous on margin; surface size 4.1 (3.1-4.6) long, 2.9 (2.5-3.4) wide. *Anal lobes* (Fig. 2E): Triangular, with minute sclerotized bosses on inner margins. Dorsum of each lobe with 3 spinelike setae 37.8 (25.3-57.1) long and an apical seta 153 (138-180) long. Venter with a slender seta, 25.0 (11.5-39.0) long, on anterior $\frac{1}{2}$ and a hairlike to spinelike seta, 52.4 (39.1-59.3) long, on posterior $\frac{1}{2}$ of each lobe on inner margin, usually a pair of stout midventral setae, 18.9 (13.7-27.7) long. *Anal plate* (Fig. 2E): Triangular, 40.5 (34.5-50.6) long, 54.1 (46.6-69.1) wide. *Anal ring* (Fig. 2F): Located beneath anal plate, subcircular, divided medially, 53.8 (48.8-58.6) long, 37.8 (32.2-44.4) wide; with 6 setae, each 96.1 (92.0-106) long. Setae bordered by an outer row of pores and a few pores on inner margin. *Microspines* (Fig. 2G): Minute, positioned in transverse middorsal clusters primarily on posterior abdominal segments.

Ventral surface. Eyes (Fig. 2A): Poorly developed, represented by small sclerotic areas on margin outside antennae; in slide mounted specimens each 24.8 (23.0-32.0) in diameter. *Antennae:* Compact, 6-segmented, 169 (149-181) long, width of base 40.5 (32.2-48.3). Scape 31.8 (27.6-46.6) long. Segments II to VI: 28.8 (25.3-32.2), 46.7 (29.9-50.6), 14.1 (13.8-16.1), 14.9 (13.8-18.4), 27.2 (20.6-32.2) long respectively. Segments: I with 3 or 4 hairlike setae, II with 1 or 2 slender setae and a sensory pore, III with 3 long setae, IV with 1 fleshy and 1 slender seta, V with 2 fleshy and 2 or 3 slender setae, VI with 3 fleshy and 3 to 5 hairlike setae. *Clypeolabral shield:* Length 135 (126-148), width 100 (89.3-110). *Labium* (Fig. 2H): Triangular, 3-segmented, 89.1 (80.5-92.3) long, 63.6 (55.2-80.5) wide; with 14 slender setae (2 basal, 1 medial, and 4 apical pairs) each 19.7 (9.20-34.5) long. *Legs:* Trochanter with a pair of pores medially positioned, with only a slight division suture. *Claw* (Fig. 2I) with denticle; tarsal and claw digitules present, each 33.7 (23.0-39.1) long. Leg setae spinelike to hairlike.

Part of leg	Prothoracic leg	Mesothoracic leg	Metathoracic leg
Coxa	36.5 (32.0-38.4)	36.0 (32.1-40.5)	38.8 (34.5-46.0)
Trochanter	31.3 (23.8-34.5)	33.0 (27.6-34.5)	30.5 (25.3-34.3)
Femur	81.1 (75.9-98.9)	80.9 (78.1-82.8)	87.3 (78.1-115)
Tibia	45.4 (43.0-46.0)	46.5 (45.5-48.3)	51.5 (46.0-57.6)
Tarsus	73.9 (69.0-80.6)	75.0 (71.6-80.5)	83.7 (80.5-92.0)
Claw	14.1 (13.0-16.1)	20.7 (18.4-23.0)	17.9 (13.6-20.7)
Entire leg	282 (268-287)	292 (285-298)	310 (298-328)

Spiracles (Fig. 2J): Thoracic spiracles enclosed in scleroses. Anterior 31.5 (29.3–34.5) long, 16.3 (14.4–19.6) wide, atrial aperture 6.5 (5.6–6.9) in diameter. *Pores*: Primarily quinquelocular (Fig. 2K), few septilocular, positioned in clusters or rows in cephalothorax, spiracular pores extending from spiracles to margin, in transverse abdominal rows 1, occasionally 2 pores wide; few trilocular pores in cephalothoracic margin; each 4.7 (3.6–5.1) in diameter. Cruciform pores (Fig. 2L) in groups of 3–12 pores, positioned laterad of antennae and on margin of abdominal segments, each 5.5 (4.9–6.8) long, 4.7 (3.8–4.9) wide. *Setae* (Fig. 2M): Cluster of 8 or 10 setae between antennae, 2 stouter than rest; other slender, hairlike setae positioned in transverse segmental rows; each 25.2 (10.7–40.7) long; with a pair of stout setae near vulva 34.6 (25.4–40.5) long; a pair of stout, spinelike, suranal setae positioned at apex of anal cleft 71.9 (58.6–80.6) long. *Microtubular ducts* (Fig. 2D): Located in marginal and submarginal areas only, shape and size similar to those on dorsum. *Microspines* (Fig. 2G): Transverse midventral clusters on each abdominal segment, more numerous on posterior segments.

Etymology: The species name is derived from its host plant.

Sincere appreciation is extended to Douglass R. Miller, Systematic Entomology Laboratory (SEL), U.S. Department of Agriculture (USDA) for reviewing this manuscript before publication. In addition, we wish to thank George C. Steyskal, SEL, USDA, for verification of our proposed generic and species name, and Lewis L. Deitz, Department of Scientific and Industrial Research, New Zealand, for the loan of type material of the genus *Scutare*.